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US 08/809,620 (TE20081024)
Reply to OA on 04/30/08**ENTERED CLAIMS FILED ON 6/28/01**

The clean version with status indicator of the claims filed on 6/28/01 and accepted as "entered" is so the following.

Claims

1 (amended) - Optical device comprising a mirror and a device actuating the mirror, characterized in that the mirror and the actuating device are independent concave membranes (called membranous mirror and actuating membrane).

14 (amended) - Optical device according to claim 1 characterized in that the actuating membrane and the membranous mirror are made totally or partially of a material having shape memory.

15 (amended) - Optical device according to claim 1 characterized in that, for their folding, the concave actuating membrane and the concave membranous mirror are made quasi plane by the formation of concentric circular undulations obtained by a succession of centred distortion alternately concave and convex, and the quasi plane one thus obtained rolled up on itself according to a diameter.

18 (amended) - Optical device according to claim 1 characterized in that the actuating membrane and the membranous mirror are obtained by material deposit on a liquid contained in a container rotating around a vertical axis.

19 (amended) - Optical device according to claim 1 characterized in that the membranous mirror and the actuating membrane have central and/or peripheral flanges

44 (new) - Optical device according to claim 1 characterized in that the distance between the actuating membrane and the membranous mirror is monitored permanently by capacitive coupling between said actuating membrane and said membranous mirror.

45 (new) - Optical device according to claim 18 characterized in that a ring, on which the materials constituting a membrane can be deposited, is fixed in a removable way on the revolving container, and in that the said ring allows the handling of the membrane.

All the other claims are considered as canceled previously.

The future amendments will be made from this claims listing under 37CFR 1.121(c)

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Reply to OA on 04/30/08**Cancelation of claims 14, 18, 19, 44****Claims listing filed on 07/12/06 (but faxed on 07/17/06...)****(TE20060717b) page 7****Working document with text of canceled claims, as original text.****07/12/06 Amendments CLAIMS (TE20060526)**

1 (twice amended)- Telescope optical device comprising a mirror and a device actuating the mirror,

characterized in that the mirror and the actuating device are independent concave free concave membranes (called membranous mirror and actuating membrane) without contact between them, or with an other device, free at their peripheries and tied by their central parts to the telescope..

14 (canceled)- Optical device according to claim 1 characterized in that the actuating membrane and the membranous mirror are made totally or partially of a material having shape memory

18 (canceled)- Optical device according to claim 1 characterized in that the actuating membrane and the membranous mirror are obtained by material deposit on a liquid contained in a container rotating around a vertical axis.

19 (canceled)- Optical device according to claim 1 characterized in that the membranous mirror and the actuating membrane have central and/or peripheral flanges

44 (canceled)- Optical device according to claim 1 characterized in that the distance between the actuating membrane and the membranous mirror is monitored permanently by capacitive coupling between said actuating membrane and said membranous mirror.

45 (new) - Telescope optical device according to claim 1,

characterized in that there are two levels of control to give at the free membranous mirror a perfect shape :

In a first level, an approximate shape is given to the free actuating membrane by interaction of a magnetic fields tied to the telescope with magnetic fields generated by actuating membrane;

in a second level, a perfect form is given to the free membranous mirror by electrostatic interaction of the free actuating membrane with the free membranous mirror.

46 (new) - Telescope optical device according to claim 1,

characterized in that by use of the capacitive coupling between the conductive layer of the mirror and specific electrodes of the actuating membrane, the spread electronic integrated in the actuating membrane acts for the self-stabilisation of the shape of the system mirror--actuating membrane

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47 (new - 15 twice amended) - Optical device according to claim 1 characterized in that, for their folding, ~~the concave actuating membrane and the concave membranous mirror are made quasi plane by the formation of concentric circular undulations obtained by a succession of centred distortion alternately concave and convex, and the quasi plane one thus obtained rolled up on itself according to a diameter~~ for its folding, the concave membranous mirror is deformed by the formation of concentric circular ondulations obtained by a succession of centered distortions alternately concave and convex, altering the pure concave surface of the membranous mirror in a circular surface comprising a series of circular centered waves whose the vertical crest to crest distance is so small as one wishes, in view of the number of waves so great as one wishes.

and in that the thin almost flat object so obtained is wound onto itself, forming a cylinder.

48 (new - 15 three amended) Optical device according to claim 1 characterized in that, for their folding, ~~the concave actuating membrane and the concave membranous mirror are made quasi plane by the formation of concentric circular undulations obtained by a succession of centred distortion alternately concave and convex, and the quasi plane one thus obtained rolled up on itself according to a diameter~~ for its folding, the concave membranous actuating membrane is deformed by the formation of concentric circular ondulations obtained by a succession of centered distortions alternately concave and convex, altering the pure concave surface of the membranous mirror in a circular surface comprising a series of circular centered waves whose the vertical crest to crest distance is so small as one wishes, in view of the number of waves so great as one wishes.

and in that the thin almost flat object so obtained is wound onto itself, forming a cylinder.

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Reply to OA on 04/30/08**Amendments claims on 07/12/06 (07/17/06) (TE20060526)****Marked up version****Claims**

1 (amended) - Optical device comprising a mirror and a device actuating the mirror, characterized in that the mirror and the actuating device are free independent concave membranes (called membranous mirror and actuating membrane) without contact between them, or with other device, and tied by their central parts to the telescope.

Claims 14, 18, 19, 44 canceled (Current work 10/20/08)

45 (new) - Telescope optical device according to claim 1.

characterized in that there are two levels of control to give at the free membranous mirror a perfect shape :

In a first level, an approximate shape is given to the free actuating membrane by interaction of a magnetic field tied to the telescope with magnetic fields generated by actuating membrane;

In a second level, a perfect form is given to the free membranous mirror by electrostatic interaction of the free actuating membrane with the free membranous mirror.

46 (new) - Telescope optical device according to claim 1.

characterized in that by use of the capacitive coupling between the conductive layer of the mirror and specific electrodes of the actuating membrane, the spread electronic integrated in the actuating membrane acts for the self-stabilisation of the shape of the system mirror--actuating membrane.

47 (new - 15 third amended) - Optical device according to claim 1.

characterized in that, for its folding, the concave membranous mirror is deformed by the formation of concentric circular ondulations obtained by a succession of centered distortions alternately concave and convex, altering the pure concave surface of the membranous mirror in a circular surface comprising a series of circular centered waves whose the vertical crest to crest distance is so small as one wishes, in view of the number of waves so great as one wishes.

and in that the thin almost flat object so obtained is wound onto itself, forming a cylinder.

48 (new - 15 third amended) Optical device according to claim 1.

characterized in that, for its folding, the concave membranous actuating membrane is deformed by the formation of concentric circular ondulations obtained by a succession of centered distortions alternately concave and convex, altering the pure concave surface of the actuating membrane in a circular surface comprising a series of circular centered waves whose the vertical crest to crest distance is so small as one wishes, in view of the number of waves so great as one wishes.

and in that the thin almost flat object so obtained is wound onto itself, forming a cylinder.

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Mistake in the numbering of the claims.

The number 45, with the status of new, has soon be used in entered claims listings filed on 06/28/01, with the same status of new, but for an other object.

This claim 45 (new) does not seem to have been canceled in claims listing filed after 06/28/01, on 07/12/06, with others claims 14, 18, 19 and 44, in marked up version (see page 6)

It has been canceled by a CURRENT amendment page 5

So, for correction, the second claims 45, and claims 46, 47, 48 and 49 will be canceled, and the numbering will restart from new claim 50 to new claim 53, under 37 CFR 1.121(c)(5).

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E - Other replies to Office Action on 04/30/08

1) I ask for cancelation of the word "electrostatic" in claim 50(new).

2) I ask for cancelation of the last lines :

"and in that the thin flat object so obtained is wound onto itself,
forming a cylinder."

in claims 52(new) and 53(new).

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Marked up version of new claims listing on October 24, 2008, for cancelation of word "electrostatic" in claim 50(new) and of the last lines in claims 52(new) and 53(new)

1(twice amended)- Telescope optical device comprising a mirror and a device actuating the mirror,

characterized in that the mirror and the actuating device are free concave membranes without contact between them, or with other device, and tied by their central parts to the telescope.

14-15 (canceled), 18-19 (canceled), 44 (canceled), 45-49 (canceled)

50(new) Telescope optical device according to claim 1,

characterized in that there are two levels of control to give at the free membranous mirror a perfect shape :

In a first level, an approximate shape is given to the free actuating membrane by interaction of a magnetic field tied to the telescope with magnetic fields generated by actuating membrane;

In a second level, a perfect form is given to the free membranous mirror by electrostatic interaction of the free actuating membrane with the free membranous mirror.

51(new) Telescope optical device according to claim 1,

characterized in that by use of the capacitive coupling between the conductive layer of the mirror and specific electrodes of the actuating membrane, the spread electronic integrated in the actuating membrane acts for the self-stabilisation of the shape of the system mirror--actuating membrane.

52(new) Optical device according to claim 1,

characterized in that, for its folding, the concave membranous mirror is deformed by the formation of concentric circular ondulations obtained by a succession of centered distortions alternately concave and convex, altering the pure concave surface of the membranous mirror in a circular surface comprising a series of circular centered waves whose the vertical crest to crest distance is so small as one wishes, in view of the number of waves so great as one wishes.

~~and in that the thin almost flat object so obtained is wound onto itself, forming a cylinder.~~
53(new) Optical device according to claim 1,

characterized in that, for its folding, the concave membranous actuating membrane is deformed by the formation of concentric circular ondulations obtained by a succession of centered distortions alternately concave and convex, altering the pure concave surface of the actuating membrane in a circular surface comprising a series of circular centered waves whose the vertical crest to crest distance is so small as one wishes, in view of the number of waves so great as one wishes.

~~and in that the thin almost flat object so obtained is wound onto itself, forming a cylinder.~~

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F - New figure 6 - Now, to answer to the legitimate worry of the examiner about the figure 6, a single narrow line, it is simple to consider a membranous mirror of (moderate) diameter 10 meters and thickness 10 microns.

It is easy to have crest to crest thickness of 1 mm, without permanent residual distortion after unfolding in space.

At the scale of 10 cm pour 10 m, it is 1/100, the crest to crest thickness on the figure will be 1/100 mm.

For the actuating membrane of thickness of, for example, 100 microns, the thickness of the figure is 1/10 mm, in the order of the narrowest line made by standard printer or by ball-point pen.

That would be exactly the same thing with a 100 meters diameter membranous mirror.

So, the narrow line is the best representative figure.

(My patent 6,676,262 B1 is always a good reading...)

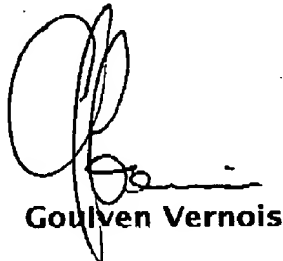
G - For the fun - If you consider a pure geometrical concave surface, without thickness but with a suitable strength modulus of course, the crest to crest will be at the limite really zero because the waves number can be infinite.

The true length will be always the length of the diametral arc of the concave surface, however can be the deep or arrow of the concave surface.

The real surface area of the transformed pure geometrical concave surface does not will be the classical projection of this concave surface on a plan, but well the surface area of this pure geometrical concave surface itself.

This topological entertainment is for the fun, of course! (You deserve, after the reading of my paper...)

Respectfully Yours



Goulven Vernois

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